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**SUBJECT:** Appeal Brief

**Serial No.:** U.S. Patent Application 09/871,467, filed May 31, 2001

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Patent

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: Liang Chen, *et al.*

Application No.: 09/871,467

Filing Date: May 31, 2001

Confirmation No.: 1738

Group Art Unit: 1714

Examiner: K. Wyrozebski Lee

Title: Surfactant Containing Insulation Binder

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Commissioner for Patents  
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Dear Sir:

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. §1.192

In accordance with the provisions of 37 C.F.R. §1.192, Appellants submit the following Brief on Appeal.

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Owens-Corning Fiberglass Technology, Inc. Assignment of the application was submitted to the U. S. Patent and Trademark Office on August 22, 2001 and recorded on August 24, 2001 at Reel 012106, Frame 0116.

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## **II. RELATED APPEALS AND INTERFERENCES**

There are no known appeals or interferences that will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

## **III. STATUS OF CLAIMS**

The status of the claims is as follows:

Claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32

are rejected, pending, and appealed.

Claims 2 – 3, 11, 14 – 17, 20, 22, 25, and 28 are canceled.

## **IV. STATUS OF AMENDMENTS**

No claim amendments were made subsequent to the final rejection set forth in the Office Action dated April 14, 2005.

## **V. SUMMARY OF THE INVENTION**

The present invention is a polycarboxy binder composition that has a reduced surface tension. (See, e.g., page 2, lines 21 – 24). The binder composition includes a polycarboxy polymer, a polyhydroxy crosslinking agent, a surfactant, and water. (See, e.g., page 2, lines 27 – 30, page 4, lines 5 – 11 and 20 – 24, and page 4, line 31 – page 5, line 1). The water may be present in an amount up to 98% by weight based on the total weight of solids in the binder composition. (See, e.g., page 2, line 32 – page 3, line 2, and page 4, line 31 – page 5, line 2). Optionally, the binder composition may include a hydrolyzed silane coupling agent and/or a mineral oil. (See, e.g., page 3, lines 7 – 12). In preferred

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embodiments, the primary solids component of the binder is acrylic acid. (See, e.g., page 4, lines 10 – 11). Surfactants suitable for use in the binder composition include cationic, amphoteric, and nonionic surfactants. (See, e.g., page 4, lines 7 – 9). The surfactant reduces the surface tension of the polycarboxylic binder composition to less than the surface tension of an equivalent weight phenol formaldehyde binder. (See, e.g., page 8, lines 5 – 9 and Table 1 on page 8). The binder composition may be formed by mixing the polycarboxy polymer, the polyhydroxy crosslinking agent, and 50 – 60 weight percent water in a conventional mixing device to form a pre-mix. (See, e.g., page 3, lines 6 – 7 and page 6, lines 4 – 5). In use, the binder composition may be applied to fiberglass that is subsequently heated to cure the binder. (See, e.g., page 6, lines 9 – 10). The cured fiberglass may then be formed into a fiberglass bat that may be used as thermal or acoustical insulation products. (See, e.g., page 6, lines 9 – 15). The surfactant present in the binder composition reduces the surface tension of the binder and enables the binder to be uniformly distributed throughout a matrix of glass fibers, to have improved wetting on the glass fiber surface, and to have improved fiber-to-fiber junctions. (See, e.g., page 9, lines 15 – 19 and Figures 2 and 3).

## VI. ISSUES

The issues are as follows:

- (1) Whether the teachings of Hummerich (U.S. Patent No. 6,071,994) or Reck (U.S. Patent No. 6,099,773) in view of Arkens *et al.* (U.S. Patent No. 6,136,916) with evidence provided by Chen (U.S. Patent No. 6,274,661) or Svend (EP 567,480) render the subject matter recited in claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32 obvious under 35 U.S.C. §103(a).

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(2) Whether the Examiner's request for clarification of numerical limitations of the surface tension recited in the claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32 is warranted.

### **VII. GROUPING OF CLAIMS**

Claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32 of the present application may not be considered in one group that stand or fall together. Rather, the claims should be grouped together as follows:

Claims 1, 4, 12, 21, 23, and 30 may be considered as one group that stands or falls together;

Claims 5 – 10, 13, 24, 26, and 31 may be considered as one group that stands or falls together; and

Claims 18 – 19, 27, 29, and 32 may be considered as one group that stands or falls together.

### **VIII. ARGUMENTS**

#### **1. Obviousness Rejection Under 35 U.S.C. §103(a)**

##### **A. EXAMINER'S POSITION**

The Examiner asserts that both Hummerich and Reck teach binder compositions that include a polycarboxy binder (e.g., polyacrylic acid), a crosslinking agent (e.g., triethanolamine), and a surfactant (e.g., ethylene oxide/propylene oxide copolymers). The Examiner asserts that the surfactant may be present in the compositions in an amount from 0.05 – 20 wt %. It is further asserted that oils (e.g., silicone oils) and coupling agents

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may be present in the binder compositions of the cited references. In addition, the Examiner asserts that Hummerich teaches a process in which fiber mats are formed by melt spinning (e.g., molten glass) and Reck teaches a process that involves applying a binder composition to fibers by spraying and then curing the binder. The Examiner further asserts that Svend, which is cited by Hummerich, teaches (1) that the fibers are blown downwardly within a forming chamber onto a moving conveyor, and (2) that the binder is sprayed on the fibers while they are still hot. These sprayed fibers are then pressed at a temperature of from 100 – 250 °C for 15 seconds to 30 minutes to give a stable product. The Examiner relies upon Chen to provide information regarding the preparation of glass fiber mats such as the claimed curing temperatures and times. The Examiner relies upon Arkens *et al.* to provide information regarding the addition of conventional additives (e.g., emulsifiers, pigments, wetting agents, and the like) to a binder composition and to provide the specific types polyols. The Examiner admits that the disclosures of Hummerich and Reck do not teach the addition of surfactants to a binder pre-mix as claimed. However, the Examiner concludes that it would have been obvious to one of ordinary skill in the art to utilize the additives in Arkens *et al.* in the binder compositions disclosed by Hummerich and Reck and obtain the claimed invention.

#### **B. APPELLANTS' POSITION**

As discussed in the Examiner Interview held on January 19, 2005, surfactants can be added to a composition (e.g., a binder composition) for a variety of purposes, such as, for example, solubilization, emulsification, dispersion, aggregation, detergency, and to reduce surface tension. A surfactant may provide only one function, e.g., to act as an emulsifier, or,

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alternatively, a surfactant may be able to provide numerous functions, depending on the particular application. However, the function that the surfactant performs in a particular application is, at least in part, media dependent. For example, a surfactant utilized in a liquid-to-liquid interface, as in a polymerization process, can act differently than a surfactant in a solid-to-liquid interface, such as in a glass-to-binder interface, due to the completely different interfacial reaction mechanisms. Thus, different media, *i.e.*, a liquid-to-liquid interface versus a solid-to-liquid interface, may cause the same surfactant to perform different functions in each media. Therefore, Appellants submit that one particular surfactant may perform different functions depending on the application and the media in which it is employed. In addition, Appellants submit that there is no obvious connection, and no reason to believe, that a surfactant that performs a function in one application will necessarily perform that same function in another application. Further, in view of the above, Appellants submit that a particular feature or function of a surfactant is not an inherent feature in all applications (*e.g.*, liquid-to-liquid interface versus a solid-to-liquid interface). Thus, the fact that a surfactant acts as a surface reducer in a liquid-to-solid interface does not mean that that same surfactant will act as a surface reducer in another media, such as, for example, a liquid-to-liquid interface.

Both Hummerich and Reck teach the addition of an anionic, nonionic, cationic, or amphoteric emulsifier to stabilize the polymer during the polymer's formation if a polymerization method such as emulsion, precipitation, suspension, or dispersion is employed. (*See, e.g.*, column 6, lines 55 – 60 of Hummerich and column 6, lines 9 – 14 of Reck). The emulsifier is utilized in Hummerich and Reck in a liquid-to-liquid media to assist in the crosslinking of the polyacids by stabilizing the individual polymer droplets. (*See, e.g.*,

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column 6, lines 55 – 59 of Hummerich and column 6, lines 9 – 13 of Reck). On the other hand, in the present invention, a surfactant is utilized to reduce the surface tension of the binder/glass interface, which is a liquid-to-solid media interface, and not to polymerize the polycarboxy polymer (a liquid-to-liquid interface). For example, in claim 1, a surfactant, water, and a pre-mix containing a preformed polycarboxylic polymer and a polyhydroxy crosslinking agent form the binder composition. In claim 5, a polycarboxy polymer is formed and then added to a polyhydroxy crosslinking agent and a binder to form a binder composition. In claim 18, a surfactant is added to a binder pre-mix containing a polycarboxy polymer and a polyhydroxy crosslinking agent. In each of these claims, the surfactant is added or present after the polymer has been formed. This feature is not taught or suggested by either Hummerich or Reck.

As discussed above, there is no reason to believe that the emulsifier added to the polymerization process of Hummerich and Reck (a liquid-to-liquid interface) would act as a surface tension reducer as in the inventive binder composition (a solid-to-liquid interface), even if the same surfactant were employed in Hummerich, Reck, and in the instant invention. Moreover, there is no teaching or suggestion anywhere in either Hummerich or Reck that the disclosed emulsifiers would function to reduce the surface tension of the binder, and such a fact cannot be gleaned simply from the fact that a surfactant was added to form the polymer of the binder. Therefore, Appellant respectfully submits that the claimed subject matter is not obvious over the teachings of Hummerich and/or Reck.

Arkens *et al.* is cited by the Examiner for assertedly teaching the addition of an additive such as an emulsifier prior to adding the binder to glass fibers. (See, e.g., Office Action dated April 14, 2005 at page 3, lines 17 – 19). Arkens *et al.* disclose a formaldehyde-

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free curable aqueous composition that includes a polyacid, a polyol, and a phosphorous-containing accelerator. (See, e.g., Abstract). The polyacid is preferably an addition polymer formed from at least one ethylenically unsaturated monomer. (See, e.g., column 57 – 59 of Arkens *et al.*). The addition polymer may be formed by solution polymerization, emulsion polymerization, or suspension polymerization techniques. (See, e.g., column 4, lines 59 – 62 of Arkens *et al.*). When emulsion polymerization techniques are utilized to form the polymer, anionic and/or nonionic surfactants may be used. (See, e.g., column 4, lines 63 – 64 of Arkens *et al.*). Arkens *et al.* also disclose that the formaldehyde-free curable aqueous composition may contain conventional treatment components such as emulsifiers, pigments, fillers, anti-migration aids, curing agents, coalescents, wetting agents, biocides, plasticizers, organosilanes, anti-foaming agents, colorants, waxes, and anti-oxidants. (See, e.g., column 6, lines 52 – 57).

Appellants submit that the use of the term "surfactant" with respect to the formation of the addition polymer and the use of the term "emulsifier" with respect to the list of potential additives to the formaldehyde-free curable aqueous composition in Arkens *et al.* connotes that Arkens *et al.* intended different meanings by the two terms. Thus, Appellants submit that the "emulsifier" listed as a possible additive to the aqueous composition is an emulsifying agent and not a surface reducing agent. Therefore, even if Arkens *et al.* were to be properly combined with Hummerich or Reck, the combination would still not result in the binder composition (claim 1), the process for producing fiberglass insulation binder (claim 5), or the process for manufacturing a fiberglass insulation product (18) of the present invention in which a surfactant that reduces the surface tension of the binder composition is present.

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Notwithstanding the above, and assuming, *arguendo*, that the terms "emulsifier" and "surfactant" within Arkens *et al.* were interchangeable, the term "emulsifier" is listed in an extensive list of additives in a "catch-all" paragraph. Appellants respectfully submit that there is no motivation for one of skill in the art to choose to add an emulsifier from the extensive laundry list of additives suggested by Arkens *et al.* and combine that emulsifier with the teachings of Hummerich or Reck and arrive at the presently claimed invention. To establish a *prima facie* case of obviousness, there must be some motivation, either within the reference or in the knowledge of those of skill in the art, to modify the reference or combine the references' teachings, there must be a reasonable expectation of success, and the prior art references must meet all of the claim limitations. (See, e.g., *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 2, May 2004, §2143, page 2100-129). There is no teaching or suggestion within the four corners of Hummerich, Reck, or Arkens *et al.* of reducing the surface tension of either the formaldehyde-free binder compositions of Hummerich or Reck or the formaldehyde-free curable aqueous composition of Arkens *et al.* Therefore, there is no motivation for one of skill in the art to add an emulsifier as taught in Arkens *et al.* to achieve a binder composition having a reduced surface tension. Further, there is no reason to presume that the emulsifier of Arkens *et al.* would have surface tension reduction properties, since surfactants have different properties depending on the media and/or the application, as discussed above. Thus, Appellant respectfully submits that the claimed subject matter is not obvious over the teachings of Hummerich and/or Reck and/or Arkens *et al.*

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Although the above-presented arguments apply equally to all appealed claims (i.e., claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32), Appellants submit that claims 1, 5, and 18 are also separately patentable at least for the reasons identified below.

Appealed independent claim 1 recites a binder composition that includes a binder pre-mix containing a polycarboxy polymer and a polyhydroxy crosslinking agent, water in an amount up to 98 weight percent based on the total weight of solids in the binder, and a surfactant added to the pre-mix in an amount sufficient to control the surface tension of the binder composition to less than the surface tension of an equivalent weight percent solids phenolic binder composition. Appellants submit that none of Hummerich, Reck, or Arkens *et al.* teach or suggest the feature recited in claim 1 in which the surfactant is added to a binder pre-mix in an amount sufficient to control the surface tension of the binder composition to less than the surface tension of an equivalent weight percent solids phenolic binder composition. Hummerich and Reck do not teach the formation of a pre-mix and then the addition of a surfactant, they teach the addition of a surfactant to form the polymer. Arkens *et al.* disclose an extensive list of additives, but do not teach or suggest when or where the addition of the additive(s) are to take place.

In addition, there is no teaching or suggestion within the Examiner's cited references of a surfactant being added to a binder pre-mix in an amount sufficient to control the surface tension of the binder composition to less than the surface tension of an equivalent weight percent solids phenolic binder composition. The only surfactant added in Hummerich and Reck is used to stabilize the polymer during its formation. Both Hummerich and Reck are silent as to any teaching of surface tension or in reducing or controlling surface tension. Arkens *et al.* provide no assistance in support of adding a surfactant to reduce surface

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tension. Without some teaching or suggestion within the four corners of the references to modify or combine the references, there can be no *prima facie* case of obviousness.

Appealed independent claim 5 claims a process for forming a fiberglass insulation binder that includes the steps of forming a polycarboxy polymer; combining the formed polymer, a polyhydroxy crosslinking agent, a surfactant, and water to form a mixture; and blending the mixture. Hummerich and Reck teach forming their respective formaldehyde-free binders by adding the alkanolamine to the polymer dispersion. (See, e.g., column 6, lines 55 – 60 of Hummerich and column 6, lines 9 – 14 of Reck). Arkens *et al.* merely disclose a laundry list of additives (e.g., an "emulsifier") that may be present in the disclosed formaldehyde-free aqueous composition. (See, e.g., column 6, lines 52 – 57). However, Arkens *et al.* do not teach or suggest when or how the additive(s) is added to the formaldehyde free aqueous composition. They simply disclose that the aqueous composition may contain the additives. In fact, Arkens *et al.* is silent as to the method and time of the addition of potential additives, which, such as in the instance of a surfactant described above, may alter or affect the properties of that additive. Although Hummerich and Reck teach that an anionic, nonionic, cationic, or amphoteric emulsifier may be added to stabilize the polymer during the polymer's formation, none of Hummerich, Reck, or Arkens *et al.* teach or suggest the step of adding a surfactant after the formation of the polycarboxy polymer (*i.e.*, to a pre-formed polymer), polyhydroxy crosslinking agent, and water as is currently claimed. Thus, this feature of claim 5 is neither taught nor suggested in any of the cited references.

In addition, claim 5 recites that the surfactant is present in the binder an amount sufficient to control the surface tension of the binder to less than or about 66 dyne/cm. In Hummerich and Reck, the surfactant is added during the polymerization to

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stabilize the polymer, not to control the surface tension of the binder. Appellants submit that the addition of the polymer during the polymerization process to stabilize the polymer droplets is patentably distinct from adding the surfactant after the polymer has been formed to achieve a binder with a surface tension of less than or about 66 dyne/cm as presently claimed. Arkens *et al.* provide no assistance in support of the addition of a surfactant to reduce surface tension. There is no teaching or suggestion anywhere within Hummerich or Reck or Arkens *et al.* of reducing or controlling the surface tension, and in particular, there is no teaching of controlling the surface tension of the binder composition to less than or about 66 dyne/cm. Without some teaching or suggestion within the four corners of the references to modify or combine the references, there can be no case of obviousness. Thus, Appellants submit that independent claim 5 and all claims dependent therefrom are patentable for this additional reason.

Appealed independent claim 18 recites a process for manufacturing a fiberglass insulation product that includes the steps of forming a binder pre-mix that contains a polycarboxy polymer, a polyhydroxy crosslinking agent, and 50 – 60 weight percent water; adding a surfactant to the binder pre-mix to form a binder composition; applying the binder composition to glass fibers; forming the bindered glass fibers into a mat; and curing the mat. As claimed in claim 18, the surfactant is added to a pre-mix that contains a polycarboxy polymer, a polyhydroxy crosslinking agent, and water in an amount of approximately 50 – 60 weight percent. This feature is neither taught nor suggested within any of Hummerich, Reck, or Arkens *et al.* Hummerich and Reck do not teach the formation of a pre-mix and then the addition of a surfactant, they teach the addition of a surfactant during polymerization to form

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the polymer. Arkens *et al.* disclose an extensive list of additives, but do not teach or suggest when or where the addition of the additive(s) is to take place.

In addition, claim 18 recites that the surfactant is added in an amount sufficient to control the surface tension of the binder composition to less than the surface tension of an equivalent weight percent solids phenolic binder composition. There is no teaching or suggestion of adding a surfactant in an amount sufficient to reduce the surface tension of the binder. The only surfactant added in Hummerich and Reck is to stabilize the polymer during its formation. Both Hummerich and Reck are silent as to any teachings of surface tension or in reducing or controlling surface tension. Arkens *et al.* are silent as to any teaching or suggestion of controlling the surface tension of the binder composition.

Therefore, Appellants submit that there is no teaching or suggestion within Hummerich or Reck or Arkens *et al.* of reducing or controlling the surface tension, and in particular, there is no teaching of the feature recited in claim 18 of controlling the surface tension of the binder to less than the surface tension of an equivalent weight percent solids phenolic binder composition. Without some teaching or suggestion within the four corners of the references to modify or combine the references, there can be no case of obviousness.

#### C. SUMMARY

Claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hummerich (U.S. Patent No. 6,071,994) or Reck (U.S. Patent No. 6,099,773) in view of Arkens *et al.* (U.S. Patent No. 6,136,916) with evidence provided by Chen (U.S. Patent No. 6,274,661) or Svend (EP 567,480). Hummerich or Reck, whether taken alone or in combination with Arkens *et al.*

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with evidence provided by Chen or Sven, do not teach or suggest the invention as claimed. Accordingly, Appellants respectfully submit that the Examiner's rejection of claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32 as being obvious over Hummerich or Reck in view of Arkens *et al.* with evidence provided by Chen or Svend should be reversed, thereby permitting these claims to be passed to allowance.

## **2. Examiner's Request For Clarification**

### **A. EXAMINER'S POSITION**

The Examiner states that the surface tension and viscosity of the binder (*e.g.*, phenolic binder) are related and that Appellants describe the phenolic binder as a "traditional phenolic binder." (*See, e.g.*, page 5, lines 10 – 12 of the Office Action dated April 14, 2005). In view of the above, the Examiner has requested a clarification of numerical limitations of the surface tension recited in the present claims. (*See, e.g.*, page 5, lines 12 – 13 of the Office Action dated April 14, 2005). The Examiner asserts that such a request is warranted by the fact that there are so many varieties of "traditional phenolic binders" that the recitation of the surface tension is unclear. (*See, e.g.*, page 5, lines 13 - 14 of the Office Action dated April 14, 2005).

### **B. APPELLANTS' POSITION**

Claims 1 and 18 as presented for appeal recite a surfactant in an amount sufficient to control the surface tension of the binder composition to less than the surface tension of an equivalent weight percent solids phenolic binder composition. Appellants respectfully submit that the claims are not comparing the surface tension of the inventive

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binder composition to the surface tension of any phenolic binder, they are comparing the surface tension of the inventive binder composition to an equivalent weight percent solids phenolic binder composition. To recite numerical limitations for the surface tension in the claims as requested by the Examiner, Appellants would have to conduct experimentation on every weight percent phenolic binder composition. Accordingly, Appellants respectfully submit that there is no need for further clarification of the surface tension recited in claims 1 and 18.

Claim 5 recites that the surface tension of the binder is less than or about 66 dyne/cm. In claim 5, there is no comparison of the surface tension of the inventive binder composition to the surface tension of An equivalent weight percent solids phenolic binder composition. Instead, a specific value for the surface tension of the inventive binder composition is claimed. As such, there is no need for further clarification of claim 5.

#### C. SUMMARY

The claims recite clear, equivalent comparisons of the surface tension of the inventive binder composition and the comparative phenolic binder. Thus, the Examiner's request for clarification of numerical limitations of the surface tension recited in the claims 1, 4 – 10, 12 – 13, 18 – 19, 21, 23 – 24, 26 – 27, and 29 – 32 is not warranted.

#### IX. CONCLUSION

This Brief on Appeal is being filed in triplicate. Appellants hereby authorize the Commissioner to charge payment or credit any overpayment of fees necessitated by the filing of this Brief on Appeal, including the statutory filing fee of \$330.00 and any necessary

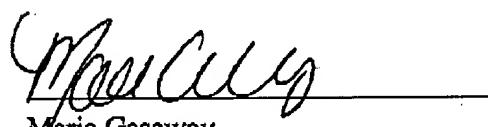
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extensions of time required to maintain pendency of this application, to Assignee's Deposit

Account No. 50-0568.

Respectfully submitted,

Date: 8/5/05



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**APPENDIX**

**CLAIMS ON APPEAL:**

1. A fiberglass insulation binder composition comprising:  
a binder pre-mix including a polycarboxy polymer and a polyhydroxy crosslinking agent;  
water in an amount such that said binder composition includes up to 98 wt % water based on the total weight of solids in the binder composition; and  
a surfactant, said surfactant being added to said binder pre-mix in an amount sufficient to control the surface tension of said binder composition to less than the surface tension of an equivalent weight percent solids phenolic binder composition.
4. The fiberglass insulation binder composition of claim 1, wherein the polycarboxy polymer is a polyacrylic acid polymer.
5. A process for producing a fiberglass insulation binder comprising the steps of:  
forming a polycarboxy polymer;  
combining said polycarboxy polymer a polyhydroxy crosslinking agent, a surfactant, and water to-form a mixture, said mixture including up to 98 wt % water based on the total weight of solids in said mixture, and said surfactant being present in said mixture in an amount sufficient to control the surface tension of the binder to less than or about 66 dyne/cm; and

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blending said mixture to form a polymeric composition useful as a fiberglass insulation binder.

6. The process of claim 5, wherein the amount of surfactant employed ranges from about 0.01 to about 10 weight percent based on the total weight of binder solids.

7. The process of claim 6, wherein the amount of surfactant employed ranges from about 0.2 to about 5 weight percent based on the total weight of binder solids.

8. The process of claim 5, wherein a pre-mixture containing the polymer and crosslinking agent comprises about 50 to 60 wt-% water.

9. The process of claim 5, further comprising the step of adding a hydrolyzed silane coupling agent to the mixture.

10. The process of claim 9, wherein the weight of said hydrolyzed silane coupling agent added to said mixture is from 0.01 to 10 wt-% based upon the weight of the mixture.

12. The process of claim 1, wherein a mineral oil dust suppressing agent is added to said mixture in an amount up to 20 wt % based upon the weight of the mixture.

13. The process of claim 5, wherein the polycarboxy polymer is a polyacrylic acid polymer.

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18. A process for manufacturing a fiberglass insulation product comprising the steps of:

mixing a polycarboxy polymer and a polyhydroxy crosslinking agent to form a binder pre-mix having approximately 50 – 60 wt % water;

adding a surfactant to said binder pre-mix to form a fiberglass binder composition, said surfactant being added to said binder pre-mix in an amount sufficient to control the surface tension of said binder composition to less than the surface tension of an equivalent weight percent solids phenolic binder composition;

applying said binder composition to glass fibers; and  
curing said mat.

19. The process of claim 18, wherein said curing step comprises:

conveying said mat through an oven at a temperature from about 200°C to 350°C for a time period of from about 30 seconds to 3 minutes.

21. The binder composition of claim 1, wherein the surface tension of the binder composition is less than or about 65.75 dyne/cm.

23. The binder composition of claim 21, wherein the surface tension of the binder composition is less than or about 60.54 dyne/cm.

24. The process of claim 5, wherein the surface tension of the binder is less than or about 65.75 dyne/cm.

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26. The process of claim 24, wherein the surface tension of the binder is less than or about 60.54 dyne/cm.

27. The process of claim 18, wherein the surface tension of the binder composition is less than or about 65.75 dyne/cm.

29. The process of claim 27, wherein the surface tension of the binder composition is less than or about 60.54 dyne/cm.

30. The fiberglass insulation binder composition of claim 1, wherein said polyhydroxy crosslinking agent is a polyol having two or more hydroxyl groups selected from the group consisting of glycerol, trimethylolpropane, 1,2,4-butanetriol, ethyleneglycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, pentaerythritol and sorbitol.

31. The process of claim 5, wherein said polyhydroxy crosslinking agent is a polyol having two or more hydroxyl groups selected from the group consisting of glycerol, trimethylolpropane, 1,2,4-butanetriol, ethyleneglycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, pentaerythritol and sorbitol.

32. The process of claim 18, wherein said polyhydroxy crosslinking agent is a polyol having two or more hydroxyl groups selected from the group consisting of glycerol,

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trimethylolpropane, 1,2,4-butanetriol, ethyleneglycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, pentaerythritol and sorbitol.

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